

# HARMONY ENERGY TECHNOLOGIES CORPORATION

MANAGEMENT DISCUSSION AND ANALYSIS  
FOR SIX-MONTH PERIOD ENDED JUNE 30, 2019

AS OF AUGUST 23, 2019

# Harmony Energy Technologies Corporation

Management discussion and analysis for the six-month period ended June 30, 2019

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## SCOPE OF MD&A AND NOTICE TO INVESTORS

The following management discussion and analysis of the financial position and results of operations ("MD&A"), should be read in conjunction with the unaudited condensed interim financial statements of Harmony Energy Technologies Corporation ("Harmony" or "Company") for the six-month period ended June 30, 2019.

This MD&A is prepared as of August 23, 2019 and complements unaudited condensed interim financial statements of the Company for the six-month period ended June 30, 2019.

All financial information has been prepared in accordance with International Financial Reporting Standards ("IFRS") and International Accounting Standard 34, Interim Financial Reporting ("IAS 34"). All amounts are in United States dollars unless otherwise indicated. Additional information is provided in the Company's unaudited condensed interim financial statements for the six months period ended June 30, 2019.

The unaudited condensed interim financial statements and the MD&A have been reviewed by the audit committee and approved by the Company's Board of Directors on August 23, 2019. These documents and more information about the Company are available on SEDAR ([www.sedar.com](http://www.sedar.com)).

## FORWARD-LOOKING STATEMENTS

Certain statements made in this MD&A are forward-looking statements or information. The Company is hereby providing cautionary statements identifying important factors that could cause the Company's actual results to differ materially from those projected in the forward-looking statements. Any statements that express, or involve discussions as to, expectations, beliefs, plans, objectives, assumptions or future events or performance (often, but not always, through the use of words or phrases such as "may", "is expected to", "anticipates", "estimates", "intends", "plans", "projection", "could", "vision", "goals", "objective" and "outlook") are not historical facts and may be forward-looking and may involve estimates, assumptions and uncertainties which could cause actual results or outcomes to differ materially from those expressed in the forward-looking statements. In making these forward-looking statements, the Company has assumed that the current market will continue and grow and that the risks listed below will not adversely impact the business of the Company. By their nature, forward-looking statements involve numerous assumptions, inherent risks and uncertainties, both general and specific, which contribute to the possibility that the predicted outcomes may not occur or may be delayed. The risks, uncertainties and other factors, many of which are beyond the control of the Company that could influence actual results include, but are not limited to: the risks could be adapted to the energy storage industry, examples: instability in market prices of metals, foreign currency exchange rate, poorly estimated reserves, risks to the environment (more stringent regulations), battery technologies conditions, regulation and government policy changes (laws or policies), failure to obtain necessary permits and approvals from government authorities, future capital requirements; intellectual property protection and infringement risks; competition; reliance on key management personnel and the other risks factors summarized below under the heading "Risks and Uncertainties".

Further, unless otherwise noted, any forward-looking statement speaks only as of the date of this MD&A, and, except as required by applicable law, the Company does not undertake any obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for management to predict all such factors and to assess in advance the impact of each such factor on the business of the Company, or the extent to which any factor or combination of factors may cause actual results to differ materially from those contained in any forward-looking statement.

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## CORPORATE OVERVIEW

On June 19, 2018, Harmony Energy Technologies Corporation ("Harmony" or "Company") was registered under the General Corporation Law of the State of Delaware, USA. Harmony's registered office is located at 2711 Centerville Road, Suite 400, City of Wilmington, County of New Castle, Delaware, USA 19808. The Company's common shares are not listed or quoted on any market at this moment.

On January 14, 2019, the Company completed the acquisition of the Energy Storage Business that had been spun out from Golden Share Resources Corp. ("Golden Share"), a Canadian public Company listed on the TSX Venture Exchange ("TSXV"). For more information on the spinout, please refer to Golden Share's press releases of October 15, 2018, December 13, 2018 and December 24, 2018, as well as Golden Share's management information circular dated October 22, 2018 which is available at [www.sedar.com](http://www.sedar.com).

Harmony is engaged to develop the solutions which entail the integration of clean energy and rechargeable battery technology, in order to become a service provider for clean electricity for a niche market at present; and it is also striving to advance the battery technologies through joint R&D and hopefully break through the barriers blocking mainstream applications.

## BOARD OF DIRECTORS AND MANAGEMENT

Harmony's Board of Directors is comprised of four members: Mr. Christian Guilbaud, Mr. Kenneth Charles ("K.C.") Grainger, Dr. Zhen Huang and Mr. Nick Zeng as the Chairman. The management team includes Mr. Nick Zeng as President and Chief Executive Officer, Mr. Demin (Fleming) Huang as Chief Financial Officer.

## CORPORATE DEVELOPMENT HIGHLIGHTS

### 1) Completion of Energy Storage Business Acquisition

On January 14, 2019, the Company completed the acquisition of energy storage business spin out from Golden Share.

### 2) Private Placement Financing

During the three months period ended on March 31, 2019, the Company completed a private placement for total proceeds of \$100,000 and issued 100,000 units at a price of \$1.00 per unit. Each Unit consists of one Harmony Share and one common share purchase warrant ("Warrant") of Harmony. Each Warrant entitles the holder thereof to acquire one Harmony Share at a price of \$1.00 for a period of 36 months from the issuance date.

## BUSINESS DEVELOPMENTS

### Highlights:

1. In Development a Home Intelligent Clean Energy System ("HICES") which is integrated with solar and lithium-ion batteries.
2. The right to access the technology for an advanced vanadium electrolyte.
3. Jointly research and develop a novel vanadium based solid-state battery technology, a potential revolutionary battery technology break through.

A solution which entails the Integration of clean energy, mainly solar photovoltaic ("solar"), and rechargeable battery will be the future method of how consumers receive their electricity. The technologies for such solutions should not be the major challenge; however, the high costs for both solar and battery, are the hurdles at present. Such solutions are presently viable for a niche market. Continued research and development created for technological breakthroughs will be necessary for a solution suitable for mainstream applications.

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The clean energy technologies to generate electricity are at more advanced stage than the batteries to store electricity at present. Recognizing the opportunities, Harmony has decided to become more involved with batteries. Harmony has been developing two kind of battery systems, one is the rechargeable home lithium-ion battery system (KWh, 1 KWh, being the equivalent of 1 thousand watts for one hour) and the second is the rechargeable stationary grid vanadium flow battery system (MWh, 1 MWh, being the equivalent of 1 million watts for one hour).

Harmony is of the view that lithium-ion battery with KWh capabilities are more suitable for residential applications, while VRFB with MWh capabilities should be more suitable for commercial, industrial and stationary grid applications.

## ***1) A Home Intelligent Clean Energy System (“HICES”)***

The Lithium-ion battery is the most advanced matured battery technology as of today. And the cost of lithium-ion batteries has been tremendously reduced (about 80%, from US\$1000 to 200 per KWh) over the past decade. The Manufacturing of lithium-ion battery is capital intensive and very competitive. Harmony selected through ODM (Original Design Manufacturing) to partner with lithium-ion battery manufacturer to jointly develop the system.

System’s key specifications:

6 KW continuous power; 15 KWh Capacity (minimum); Operating temperature: -4 to 122 F.

Target market:

- a) The areas in the United States and Canada with much higher rates for electricity than the national average, including and especially the remote isolated areas and the other off grid areas and applications.
- b) For the customers who would accept paying extra for environmental or other reasons.
- c) For the customers who would like to improve the resilience and reliability of their electricity supply, where the grid is not completely so dependable or for extreme weather conditions.

Development status:

The prototype system is under testing at the manufacturing facility during the second quarter of 2019. The installation on site is expected for the second half of 2019.

## ***2) Vanadium Redox Flow Batteries (“VRFB”)***

VRFB is a type of rechargeable flow battery that employs vanadium ions in different oxidation states to store potential chemical potential energy. After enormous research and developments since the 1980s, the VRFB is regarded as a mature technology in flow battery technologies.

VRFB offers the following desirable characteristics:

- a) demonstrates excellent electrochemical reversibility and length life cycle;
- b) the electrolytes are aqueous and inherently safe and non-flammable. Even when the electrolytes are accidentally mixed, the battery suffers no permanent damage; and

VRFB’s main drawback is a relatively low energy density (energy-to-volume ratio). The heavy weight of the battery due to aqueous electrolyte therefore limits applications, but still might be well-suited to stationary grid applications.

Target Markets:

- a) For utility companies to increase the capacity and capability of existing transmission and distribution utility assets, defer grid upgrade investments; improve grid reliability, and support the ability of grid operators to manage increasingly variable loads and resources.

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- b) For renewable energy power plants to buffer and smooth the variability of energy output generated by solar and wind; and shifting output to enable increased delivery of renewable energy to maximize the return of investment.
- c) For the other Commercial & Industrial customers, with the energy storage installed after the electric meter, benefits include lower energy costs, increased reliability and power quality; and possible revenue streams through arbitrage where applicable.
- d) Intelligent integration with VRFBs as long duration energy storage would make the microgrid more reliable and competitive than today's extremely complicated ultra large one grid.

Development status:

- a) a License Agreement (the "License Agreement") with Battelle Memorial Institute ("Battelle") to produce, use and sell vanadium electrolytes developed by Pacific Northwest National Laboratory ("PNNL") of the United States Department of Energy.

The licensed vanadium electrolytes ("VE") developed by PNNL have advantages over previous generations, including a wider temperature-operating range and higher energy density, particularly at higher temperatures, constituting a reliability improvement of the licensed VE.

- b) The samples from trial production of the licensed VE were under independent testing for composition, chargeability, dischargeability and stability. The satisfactory results met the specifications of the patent of PNNL. The licensed VE from Harmony is ready for commercial application,

Emerging VRFB has been attracting attention and sounds exciting but is still a nascent industry at the developmental stage. Harmony believes that VRFB still requires a few break-through developments. Harmony's strategy is to remain fully engaged in this exciting nascent industry while optimizing use of the Company's limited financial and management resources as a small company. The Company would like to hold the position for future possible maximum rewards but with possible minimum risks. Battery manufacturing, which is a true capital-intensive business, is not what the Company would like to pursue. With the Company's licensed VE, partnership with an established and trustworthy VRFB manufacturer through "Contract Manufacturing" would be ideal for Harmony to supply its own VRFB with possibly lowest cost and risks.

Harmony will continue to focus on the vanadium electrolyte, the most important and expensive component of VRFB. A better vanadium electrolyte would in principle be expected to improve overall VRFB performance.

Harmony will also focus on implementing applications to hopefully engineer a sustainable business model suitable for VRFB based on its main advantage as the extremely long-life span as defined as decades.

### **3) *Research and Development***

To maintain a leadership is the key for a long-term business prosperity and success for Harmony as a technology company. Continued R&D will be an ongoing focus at Harmony. While Harmony will keep looking for new concepts and ideas related to clean energy and energy storage, the Company is conducting one R&D project at present.

A novel vanadium based solid-state battery technology.

Even as the lithium-ion battery technology has been dominating the energy storage at present, it is presently and will also be a niche product same as VRFB in the foreseeable future, due to still high cost,

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relatively short life span and serious safety issue etc. So, a new battery technology better than lithium-ion is on demand.

Under the Agreement for Commercializing Technology (“ACT”) with Battelle transferred from Golden Share to Harmony, PNNL will perform research and development related to novel vanadium based solid-state battery technologies. In its proposed solid-state form, the vanadium battery will have various advantages of high energy density and potentially significantly simplified battery cell design, different from both traditional solid-state and redox flow batteries.

The proposed novel vanadium solid state battery is a totally new concept proposed by the Company. The cell design will be much more simplified than the lithium-ion battery, so the manufacturing cost could be much lower. The life span will be much, probably 10 times no comma longer than lithium-ion battery. And safety will not be a concern. However, the energy density will probably be lower than lithium-ion battery, but it will be sufficient for energy storage applications.

All right and title to Intellectual Property shall be owned by Battelle subject to the rights of the United States Government as set forth in the applicable class waiver. During the term of this agreement and for a period of 6 months after the termination or completion of agreement, the Company shall have the opportunity to obtain a license to Battelle’s Subject Inventions. In particular, the Harmony shall have the option to obtain, up to and including, an exclusive license to Battelle’s Subject Inventions within a defined field of use on agreed-upon reasonable terms and conditions no comma, including the payment of negotiated license fees and royalties.

The ongoing developments at lithium-ion and VRFB technologies will likely no to be an evolution. The success of the research and development of the novel vanadium solid state battery technologies will be a revolutionary breakthrough for the battery industry no comma, which will potentially finally change the way no how the people get electricity.

However, due to the fact of foreign ownership at Harmony, the final approval is still under reviewing at certain United States Government agency. The Company is not be able to predicate whether and when the final approval will be granted.

## SELECTED FINANCIAL INFORMATION

During the six-month period ended June 30, 2019, the Company’s selected financial information as the following:

### FINANCIAL POSITION ANALYSIS

The information presented as at June 30, 2019 and December 31, 2018 represents the information of Harmony Energy Technologies Corporation.

	June 30, 2019	December 31, 2018
	\$	\$
Assets	201,326	1
Liabilities	57,945	-
Equity	143,381	1

### ASSETS

Total assets at June 30, 2019 were \$201,326 compared to \$1 at December 31, 2018, an increase of \$201,325. During the six months period ended June 30, 2019, the Company acquired the energy storage assets which included \$100,000 prepaid research expenditure according to the Agreement for Commercializing

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Technology according to the plan of arrangement of Golden Share. At the same time, the Company closed a \$100,000 private placement and issued 100,000 common share and 100,000 warrants. The Company loaned to \$180,000 to Golden Share Resources Corp. during the six months ended June 30, 2019, and the Company accrued \$6,266 interest for the loan.

### **LIABILITIES**

Total liabilities at June 30, 2019 was \$57,945 compared to \$1 at December 31, 2018, an increase of \$57,945 mainly due to Company increase unpaid the travel expense and accrued management fee and audit fee.

### **EQUITY**

Total equity at June 30, 2019 was 143,381 compared to \$1 at December 31, 2018, an increase of \$143,380 mainly due to the share issued for energy business asset acquisition from Golden Share and private placement.

### **OPERATING RESULTS ANALYSIS**

Readers are invited to take into consideration the operation results of Harmony Energy Technologies Corporation for the three-month and six-month period ended June 30, 2019 and 2018.

	Three-month ended June 30, 2019	Three-month ended June 30, 2018	Six-month ended June 30, 2019	Six-month ended June 30, 2018
	\$	\$	\$	\$
Net loss before income taxes	26,291	-	56,619	-
Basic and diluted net loss per common share	0.007	-	0.014	-

The above net loss for three-month and six-month period ended June 30, 2019 is composed as the following:

#### ***Gain on the interest income***

During the six-month period ended June 30, 2019, the Company entered into agreements of short term unsecured loans to Golden Share and totalling released US\$180,000 to Golden Share. The unsecured loans bear interest at 1% monthly and payback upon request. During the six months period ended June 30, 2019, the Company accrued \$6,266 interest income for \$180,000 loan.

#### ***Energy business expenditures***

For the six-month period ended June 30, 2019, the Company incurred energy business expenditures \$114.

#### ***Administrative expenses***

For the six-month period ended June 30, 2019, the Company incurred \$62,651 in administrative expenses included management fee of \$36,000, travel, accommodation and meal of \$12,355, accrued audit fee of \$5,000, transfer agent fee of \$4,706 and regulatory fee of \$4,590.

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## CASH FLOW ANALYSIS

	Three-month ended June 30, 2019	Three-month ended June 30, 2018	Six-month ended June 30, 2019	Six-month ended June 30, 2018
	\$	\$	\$	\$
Operating activities	97,243	-	(4,941)	-
Investing activities	(100,000)	-	(80,000)	-
Financing activities	-	-	100,000	-

## THREE-MONTH AND SIX-MONTH PERIODS ENDED JUNE 30, 2019 AND 2018 COMPARISON

### Operating Activities

The six-month period operating activities used cash flows of \$4,941 while the three-month period operating activities generate cash flow of \$97,243 in 2019. The Company received \$100,000 prepaid research expenditure refund which was paid by Golden Share as part of energy storage asset

### Investing Activities

The Company acquired the energy storage assets from Golden Share during the three months and six months period ended June 30, 2019, which the Company received \$100,000 prepaid research expenditure refund. The \$100,000 was offset by the \$180,000 loan released in the same period.

### Financing Activities

The Company received \$100,000 from private placement in the six months period ended June 30, 2019.

## QUARTERLY RESULTS TREND (IN THOUSANDS OF \$)

The following table presented the operating results for each quarter since the Company registered on June 19, 2018. Management considers that the information for each of those quarters was determined in the same way as for our audited financial statements for the year ended December 31, 2018.

	2019		2018		
	Q2	Q1	Q4	Q3	Q2
	\$	\$	\$	\$	\$
Revenue	5	1	-	-	-
Net loss and other comprehensive loss	26	30	-	-	-
Basic and diluted net loss per common share	0.007	0.008	-	-	-

## INFORMATION ON OUTSTANDING SECURITIES

The following table sets out the number of common shares and warrants outstanding as of the date hereof:

Common shares issued and outstanding	3,962,079
Potential issuance of common shares	
Warrants	100,000
<b>Fully diluted shares</b>	<b>4,062,079</b>

## RELATED PARTY TRANSACTIONS

The Company has not entered into any other related party transaction.



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## **OFF-BALANCE SHEET ARRANGEMENTS**

The Company has no off-balance sheet arrangements.

## **ESTIMATES, JUDGMENTS AND ASSUMPTIONS**

The Company prepares its financial statements in accordance with IFRS, which require management to make estimates and assumptions that affect the amounts of its assets and liabilities, the information provided with regard to future assets and liabilities as well as the amounts of revenues and expenses for the relevant periods.

## **FUTURE CHANGES IN ACCOUNTING POLICIES**

At the date of authorization of these financial statements, certain new standards, amendments and interpretations to existing standards have been published by the International Accounting Standards Board (IASB) but are not yet effective and have not been adopted early by the Company.

Management anticipates that all of the relevant pronouncements will be adopted in the Company's accounting policies for the first period beginning after the effective date of the pronouncement. Readers are invited to refer to the audited financial statements for the year ended December 31, 2018 for a full description of these new standards.

## **GOING CONCERN ASSUMPTION**

The Company's audited financial statements were prepared according to the IFRS and IAS 34, Interim Financial reporting, and under the going concern assumption. They do not reflect adjustments that should be made to the book value of assets and liabilities, the reported amounts of income and expenses and the classification of balance sheet postings if the going concern assumption was unfounded. These adjustments could be important.

## **RISKS RELATED TO FINANCIAL INSTRUMENTS**

Capital market conditions and other unforeseeable events may impact the Company's ability to finance and develop its projects.

The Company intends to continue the evaluation and development of its energy storage business subject to the availability of financing on acceptable terms. The Company intends to finance these activities either through existing financial resources or through additional equity or quasi-equity financing. However, there can be no assurance that the Company will be able to raise such additional equity.

Additional information on the Company can be found on SEDAR ([www.sedar.com](http://www.sedar.com)).